
CATALOG FOR CLAMPS FOR CLAMP HUB CONNECTIONS.

API Spec. 16A Clamps, includes assembly drawings, sizes available, parts description, and part numbers, how to install, plus a [Hub Identification Worksheet](#), a [Clamp Identification Worksheet](#), WOODCO USA [API 16A License Certificate](#) and [DNV Type Approval Certificate](#).



REG. U.S. PATENT OFFICE

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WOODCO USA presents this catalog to gain your attention and secure your business

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1.0 General

1.1 Purpose

WOODCO USA offers this catalog to provide information useful to persons working with, and seeking to purchase, clamps that fit API 16A hubs. This catalog describes WOODCO USA clamp features and provides instructions for installation and care of these clamps. Included, convenient tables with illustrations provide a reference to improve communication and facilitate selecting clamps to fit specific hubs.

1.2 Application

WOODCO USA clamps provide a reliable means to join API and other hub connections. Any of the equipment in the following list may have clamp hub connections:

Wellhead Equipment

- Casing Heads
- Casing Spools
- Tubing Heads
- Valves
- Chokes
- Crosses
- Tees
- Flowlines

Drilling Equipment

- Spools
- Blowout Preventers
- Choke and Kill Manifolds

Manifold Systems

- Mud Systems (Pump to Standpipe)
- Oil and Gas Production
- High Pressure Supply Lines

Clamps allow faster and easier make up. Where limited space requires, clamp orientation adjustment allows easy access to nuts and bolts. Clamp connections have 360° infinite adjustability.

1.3 Specification

WOODCO USA has performed stress analysis on each clamp size using formulas outlined in “Summary of Design” (AWHEM, June 1975) to demonstrate conformance with the design allowable stresses specified in API Spec 16A, First Edition.

1.4 Reference Standards

API Spec 16A

DNV M.O.U. Part 6 Ch.5 Drill N (see [Appendix B, DNV Type Approval Cert.](#))

1.5 Material

WOODCO USA manufactures clamps from material which meets or exceeds the requirements of API Spec 16A for material qualification, processing, chemical composition and mechanical properties.

1.6 Quality

WOODCO USA defines “Product Quality” as conformance to specified requirements.

WOODCO USA selects suppliers based on their ability to provide materials, products and/or services which conform to WOODCO USA and API specifications.

WOODCO USA personnel inspect clamps during manufacturing and after final operations to assure compliance with API and WOODCO USA requirements. Completed Clamps receive 100% Magnetic Particle Examination. WOODCO USA can provide any additional supplemental inspections that customers may require.

PHOTO

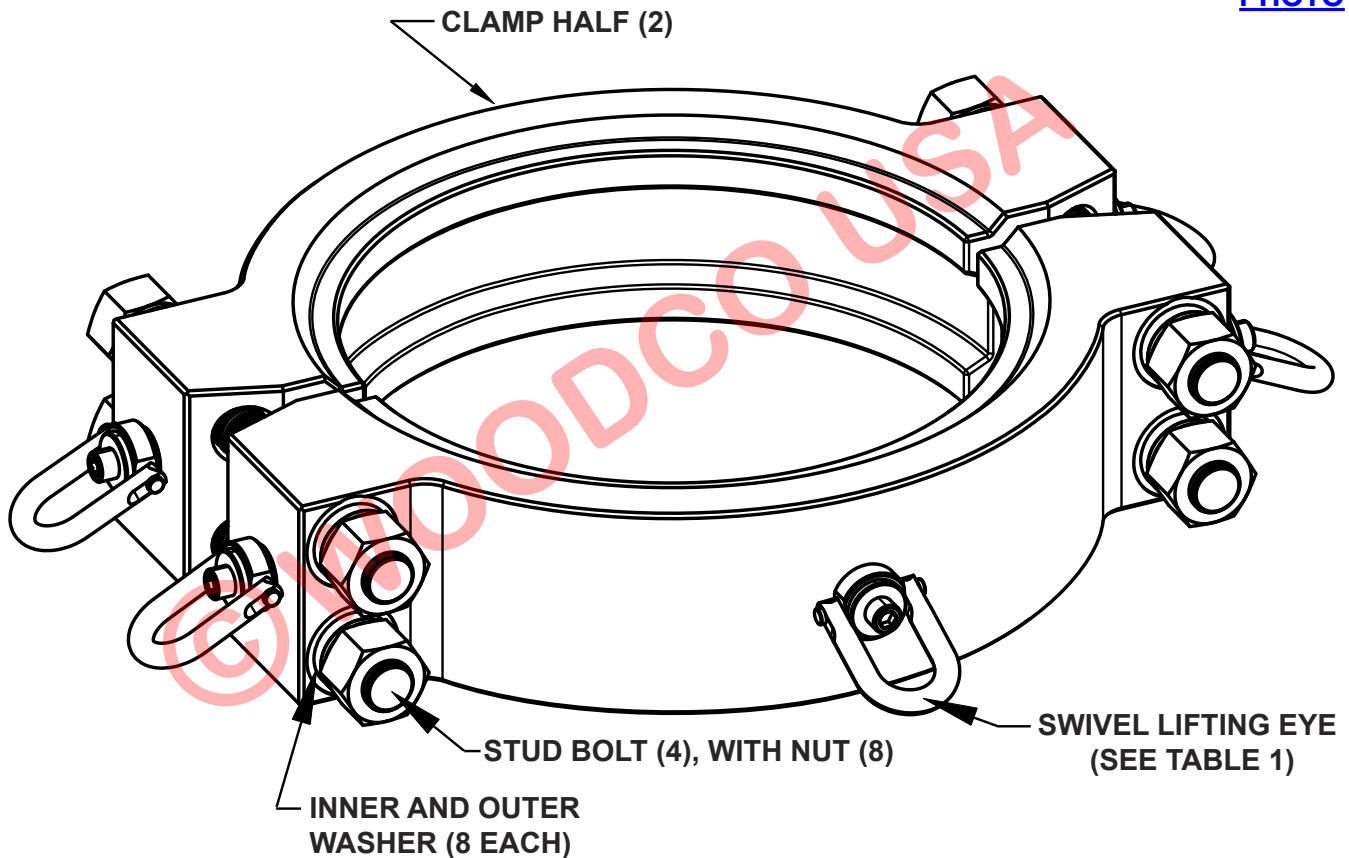


FIGURE 1, CLAMP ASSEMBLY

2.0 WOODCO USA HUB CLAMP FEATURES

- Fit all hub connections specified in API Spec 16A plus many other popular hub connections.
- Made from Forged Low Alloy Steel, qualified to the same standards API Spec 16A requires for flanges.
- 100% dimensional, hardness and magnetic particle inspected.
- Self-aligning bearing washers to evenly distribute bolting stress.
- Special coatings on bolts, nuts, and washers to ease make and break of clamp hub connections.
- Swivel lifting eyes on larger sizes, to make handling easy, quick and safe.

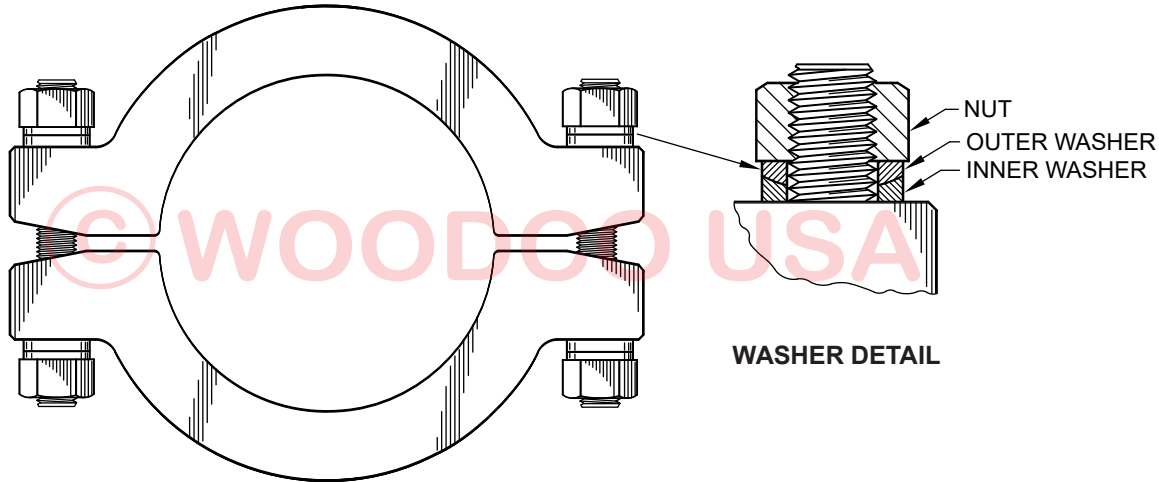


Figure 2, Clamp and Washer Detail

Table 1, Clamps and Clamp Parts

(All dimensions in inches)

CLAMP NO.	NOMINAL BORE	WORKING PRESSURE (PSI)	RING GASKET		OUTER WASHER PART NO 8 REQ'D	INNER WASHER PART NO 8 REQ'D.	BOLT SIZE	BOLT PART NO 4 REQ'D.	NUT PART NO 8 REQ'D.	LIFTING EYE, SWIVEL			APPROX. ASSEMBLY WEIGHT (LBS.)
			RX	BX						(2) REQ'D.	(4) REQ'D.	(6) REQ'D.	
1	1 13/16	10,000	20*	151	3715-05	3716-05	7/8 - 9UN X 7	3900-01	3899-02	-	-	-	51
	2 1/16	5,000	23*	152	3715-05	3716-05	7/8 - 9UN X 7	3900-01	3899-02	-	-	-	51
2	1 13/16	15,000	20*	151	3715-05	3716-05	7/8 - 9UN X 8	3900-02	3899-02	-	-	-	73
	2 1/16	10,000	23*	152	3715-05	3716-05	7/8 - 9UN X 8	3900-02	3899-02	-	-	-	73
3	2 9/16	5,000	24*	153	3715-05	3716-05	7/8 - 9UN X 8	3900-02	3899-02	-	-	-	73
	1 13/16	20,000	-	151	3715-06	3716-06	1 - 8UN X 9	3900-05	3899-03	-	-	-	150
4	2 1/16	15,000	23*	152	3715-06	3716-06	1 - 8UN X 9	3900-05	3899-03	-	-	-	150
	2 1/16	20,000	-	152	3715-06	3716-06	1 - 8UN X 9	3900-05	3899-03	-	-	-	150
5	2 9/16	15,000	24*	153	3715-06	3716-06	1 - 8UN X 9	3900-05	3899-03	-	-	-	150
	2 9/16	10,000	24*	153	3715-06	3716-06	1 - 8UN X 8 1/2	3900-04	3899-03	-	-	-	80
6	3 1/8	5,000	27*	154	3715-06	3716-06	1 - 8UN X 8 1/2	3900-04	3899-03	-	-	-	80
	3 1/16	10,000	27*	154	3715-06	3716-06	1 - 8UN X 8 1/2	3900-04	3899-03	-	-	-	82
7	4 1/16	5,000	35*	155	3715-06	3716-06	1 - 8UN X 8 1/2	3900-04	3899-03	-	-	-	82
	2 9/16	20,000	-	153	3715-07	3716-07	1 1/8 - 8UN X 9 3/4	3900-06	3899-04	-	-	-	146
8	3 1/16	15,000	27*	154	3715-07	3716-07	1 1/8 - 8UN X 9 3/4	3900-06	3899-04	-	-	-	146
	4 1/16	10,000	35*	155	3715-07	3716-07	1 1/8 - 8UN X 9 3/4	3900-06	3899-04	-	-	-	146
9	5-1/8	10,000	-	169*	3715-09	3716-09	1 3/8 - 8UN X 12	3900-08	3899-06	-	-	-	234
	7 1/16	5,000	45*	-	3715-09	3716-09	1 3/8 - 8UN X 12	3900-08	3899-06	-	-	-	234
10	3 1/16	20,000	-	154	3715-10	3716-10	1 1/2 - 8UN X 13 1/2	3900-11	3899-07	-	-	3836	310
	4 1/16	15,000	-	155	3715-10	3716-10	1 1/2 - 8UN X 13 1/2	3900-11	3899-07	-	-	3836	310
11	5-1/8	15,000	-	169*	3715-10	3716-10	1 1/2 - 8UN X 13 1/2	3900-11	3899-07	-	-	3836	310
	7 1/16	5,000	-	156	3715-10	3716-10	1 1/2 - 8UN X 13 1/2	3900-11	3899-07	-	-	3836	310
12	7 1/16	10,000	45*	-	3715-10	3716-10	1 1/2 - 8UN X 13 1/2	3900-11	3899-07	-	-	3836	310
	9	5,000	49*	157	3715-10	3716-10	1 1/2 - 8UN X 13 1/2	3900-11	3899-07	-	-	3836	310

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

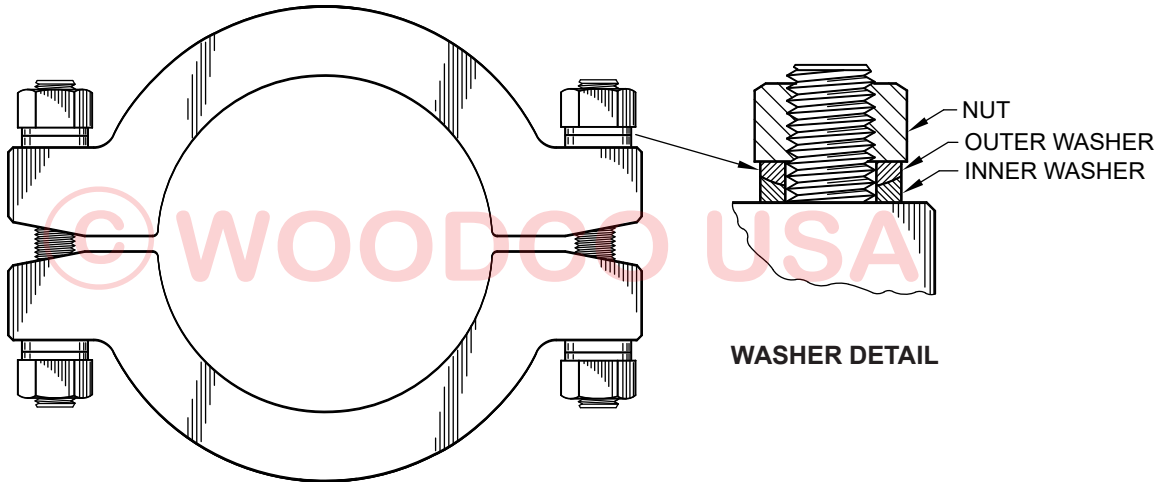


Figure 2, Clamp and Washer Detail

Table 1, Clamps and Clamp Parts (continued)

(All dimensions in inches)

CLAMP NO.	NOMINAL BORE	WORKING PRESSURE (PSI)	RING GASKET		OUTER WASHER PART NO 8 REQ'D	INNER WASHER PART NO 8 REQ'D.	BOLT SIZE	BOLT PART NO 4 REQ'D.	NUT PART NO 8 REQ'D.	LIFTING EYE, SWIVEL			APPROX. ASSEMBLY WEIGHT (LBS.)
			RX	BX						(2) REQ'D.	(4) REQ'D.	(6) REQ'D.	
9	11	3,000	53	-	3715-09	3716-09	1 3/8 - 8UN X 13	3900-09	3899-06	-	-	3836	285
	11	3,000	53*	-	3715-09	3716-09	1 3/8 - 8UN X 13	3900-09	3899-06	-	-	3836	285
10	4 1/16	20,000	-	155	3715-13	3716-13	1 7/8 - 8UN X 17	3900-24	3899-10	-	-	3836	610
	7 1/16	10,000	-	156	3715-13	3716-13	1 7/8 - 8UN X 17	3900-24	3899-10	-	-	3836	610
	7 1/16	15,000	45*	-	3715-13	3716-13	1 7/8 - 8UN X 17	3900-24	3899-10	-	-	3836	610
11	9	10,000	49*	157	3715-13	3716-13	1 7/8 - 8UN X 17	3900-24	3899-10	-	-	3836	610
	11	5,000	53*	158	3715-13	3716-13	1 7/8 - 8UN X 17	3900-24	3899-10	-	-	3836	610
11	13 5/8	3,000	57	-	3715-09	3716-09	1 3/8 - 8UN X 15 3/4	3900-26	3899-06	-	-	3836	375
	13 5/8	3,000	57*	-	3715-09	3716-09	1 3/8 - 8UN X 15 3/4	3900-26	3899-06	-	-	3836	375
12	16 3/4	2,000	65	-	3715-09	3716-09	1 3/8 - 8UN X 15	3900-10	3899-06	-	-	3836	300
	16 3/4	2,000	65*	-	3715-09	3716-09	1 3/8 - 8UN X 15	3900-10	3899-06	-	-	3836	300
13	11	10,000	53*	-	3715-12	3716-12	2 1/4 - 8UN X 19 1/4	3900-25	3899-12	3838	3836	-	834
	13 5/8	5,000	57*	160	3715-12	3716-12	2 1/4 - 8UN X 19 1/4	3900-25	3899-12	3838	3836	-	834
14	16 3/4	3,000	65	-	3715-11	3716-11	1 5/8 - 8UN X 18 1/4	3900-14	3899-08	-	-	3836	485
	16 3/4	3,000	65*	-	3715-11	3716-11	1 5/8 - 8UN X 18 1/4	3900-14	3899-08	-	-	3836	485
15	7 1/16	20,000	-	156	3715-04	3716-04	2 1/2 - 8UN X 20 3/4	3900-19	3899-13	3838	3836	-	1676
	11	15,000	-	158	3715-04	3716-04	2 1/2 - 8UN X 20 3/4	3900-19	3899-13	3838	3836	-	1676
	13 5/8	10,000	57*	159	3715-04	3716-04	2 1/2 - 8UN X 20 3/4	3900-19	3899-13	3838	3836	-	1676
16	21 1/4	2,000	73*	-	3715-11	3716-11	1 5/8 - 8UN X 18 3/4	3900-15	3899-08	3838	3836	-	525
17	20 3/4	3,000	73*	-	3715-12	3716-12	2 1/4 - 8UN X 20	3900-17	3899-12	3838	3836	-	815

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

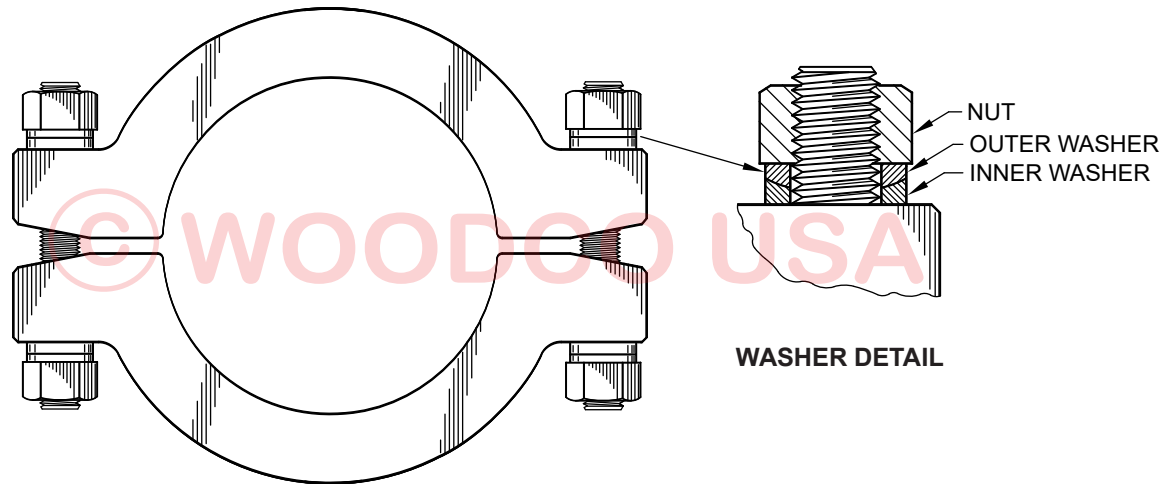


Figure 2, Clamp and Washer Detail

Table 1, Clamps and Clamp Parts (continued)

(All dimensions in inches)

CLAMP NO.	NOMINAL BORE	WORKING PRESSURE (PSI)	RING GASKET		OUTER WASHER PART NO 8 REQ'D	INNER WASHER PART NO 8 REQ'D.	BOLT SIZE	BOLT PART NO 4 REQ'D.	NUT PART NO 8 REQ'D.	LIFTING EYE, SWIVEL			APPROX. ASSEMBLY WEIGHT (LBS.)
			RX	BX						(2) REQ'D.	(4) REQ'D.	(6) REQ'D.	
18	20 3/4	2,000	73*	-	3715-12	3716-12	2 1/4 - 8UN X 20	3900-17	3899-12	3838	3836	-	1140
	20 3/4	3,000	73*	-	3715-12	3716-12	2 1/4 - 8UN X 20	3900-17	3899-12	3838	3836	-	1140
	21 1/4	2,000	73	-	3715-12	3716-12	2 1/4 - 8UN X 20	3900-17	3899-12	3838	3836	-	1140
	21 1/4	2,000	73*	-	3715-12	3716-12	2 1/4 - 8UN X 20	3900-17	3899-12	3838	3836	-	1140
19	16 3/4	5,000	-	162	3715-04	3716-04	2 1/2 - 8UN X 23 1/2	3900-20	3899-13	3838	3836	-	1365
	16 3/4	5,000	65*	-	3715-04	3716-04	2 1/2 - 8UN X 23 1/2	3900-20	3899-13	3838	3836	-	1365
	16 3/4	5,000	-	161*	3715-04	3716-04	2 1/2 - 8UN X 23 1/2	3900-20	3899-13	3838	3836	-	1365
20	30	1,000	SPCL	-	3715-11	3716-11	1 5/8 - 8UN X 17 1/2	3900-27	3899-08	-	-	3838	960
22	7 1/16	15,000	-	156	3715-12	3716-12	2 1/4 - 8UN X 18	3900-16	3899-12	3838	3836	-	920
	11	10,000	-	158	3715-12	3716-12	2 1/4 - 8UN X 18	3900-16	3899-12	3838	3836	-	920
25	7 1/16	2,000	45	-	3715-05	3716-05	7/8 - 9UN X 8 1/2	3900-03	3899-02	-	-	-	125
26	18 3/4	15,000	-	164	3715-02	3716-02	4 - 8UN X 35	3900-23	3899-18	-	-	3838	4612
	21 1/4	10,000	-	166	3715-02	3716-02	4 - 8UN X 35	3900-23	3899-18	-	-	3838	4612
27	18 3/4	10,000	-	164	3715-03	3716-03	3 1/4 - 8UN X 26 1/2	3900-22	3899-16	-	-	3838	2968
	21 1/4	5,000	-	165	3715-03	3716-03	3 1/4 - 8UN X 26 1/2	3900-22	3899-16	-	-	3838	2968
28	11	20,000	-	158	3715-01	3716-01	3 - 8UN X 24 1/4	3900-21	3899-15	-	-	3838	2335
	13 5/8	15,000	-	159	3715-01	3716-01	3 - 8UN X 24 1/4	3900-21	3899-15	-	-	3838	2335
	16 3/4	10,000	-	162	3715-01	3716-01	3 - 8UN X 24 1/4	3900-21	3899-15	-	-	3838	2335

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

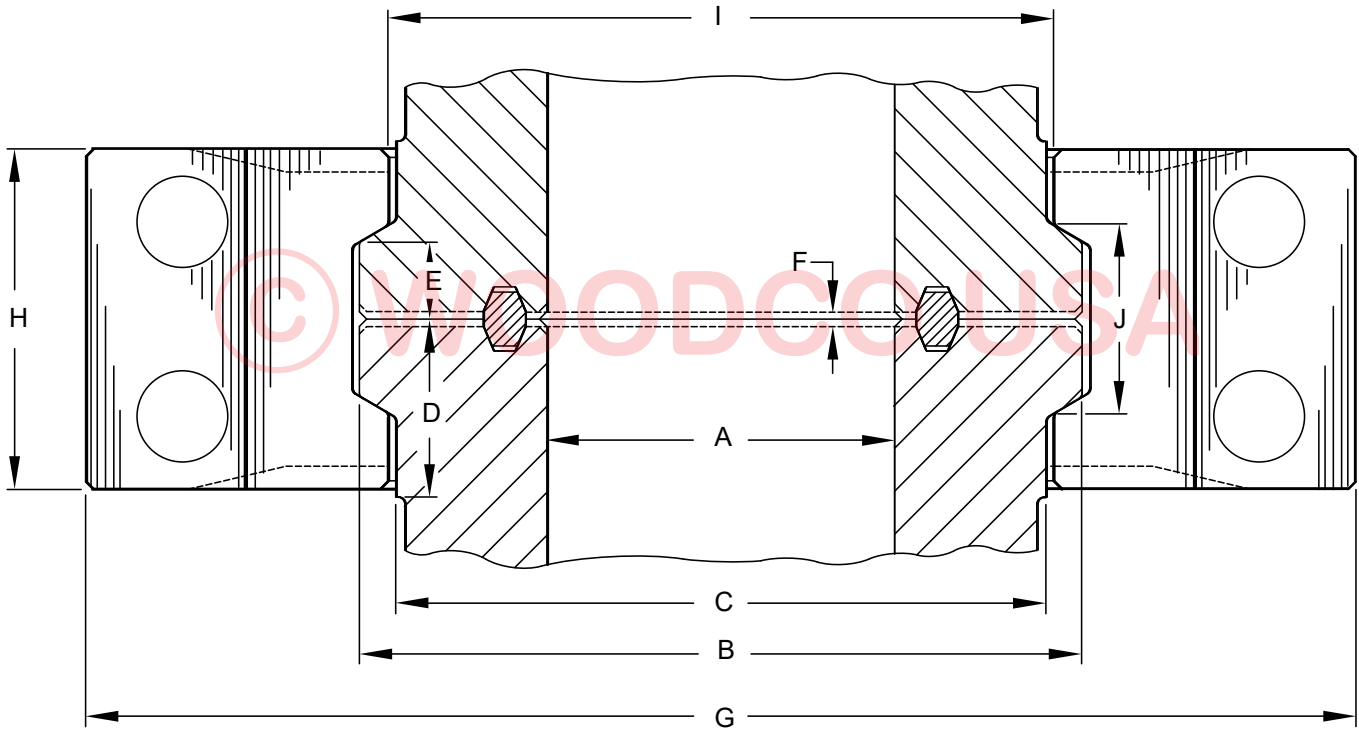


Figure 3, Clamp and Hub Dimensions

Table 2, Clamp and Hub Dimensions

(All dimensions in inches)

BORE A	WORKING PRESSURE (PSI)	RING GASKET		CLAMP NO.	HUB DIMENSIONS						F (RX ONLY) NOT API	CLAMP DIMENSIONS			
		RX	BX		B	C	D	E				G	H	I	J
								SR	RX	BX					
1 13/16	10,000	-	151	1	5.031	3.656	2.375	-	-	1.166	-	10.50	4.19	3.844	2.875
	10,000	20*	-	1	5.031	3.656	2.125	-	.989	-	.38	10.50	4.19	3.844	2.875
	15,000	-	151	2	5.781	4.406	2.500	-	-	1.166	-	12.00	4.28	4.594	2.875
	15,000	20*	-	2	5.781	4.406	2.250	-	.989	-	.38	12.00	4.28	4.594	2.875
2 1/16	20,000	-	151	3	6.125	4.500	3.375	-	-	1.622	-	13.62	6.19	4.750	3.875
	5,000	-	152	1	5.031	3.656	2.375	-	-	1.166	-	10.50	4.19	3.844	2.875
	5,000	23*	-	1	5.031	3.656	2.125	-	.911	-	.47	10.50	4.19	3.844	2.875
	10,000	-	152	2	5.781	4.406	2.500	-	-	1.166	-	12.00	4.28	4.594	2.875
	10,000	23*	-	2	5.781	4.406	2.250	-	.911	-	.47	12.00	4.28	4.594	2.875
	15,000	-	152	3	6.125	4.500	3.375	-	-	1.622	-	13.62	6.19	4.750	3.875
2 9/16	15,000	23*	-	3	6.125	4.500	3.250	-	1.380	-	.47	13.62	6.19	4.750	3.875
	20,000	-	152	3	6.125	4.500	3.375	-	-	1.622	-	13.62	6.19	4.750	3.875
	5,000	-	153	2	5.781	4.406	2.500	-	-	1.166	-	12.00	4.28	4.594	2.875
	5,000	24*	-	2	5.781	4.406	2.250	-	.911	-	.47	12.00	4.28	4.594	2.875
	10,000	-	153	4	6.312	4.938	2.625	-	-	1.166	-	12.50	4.47	5.125	2.875
	10,000	24*	-	4	6.312	4.938	2.375	-	.911	-	.47	12.50	4.47	5.125	2.875
	15,000	-	153	3	6.125	4.500	3.375	-	-	1.622	-	13.62	6.19	4.750	3.875
	15,000	24*	-	3	6.125	4.500	3.250	-	1.380	-	.47	13.62	6.19	4.750	3.875
20,000	-	153	6	8.437	6.812	3.000	-	-	1.310	-	16.00	5.38	7.062	3.250	

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

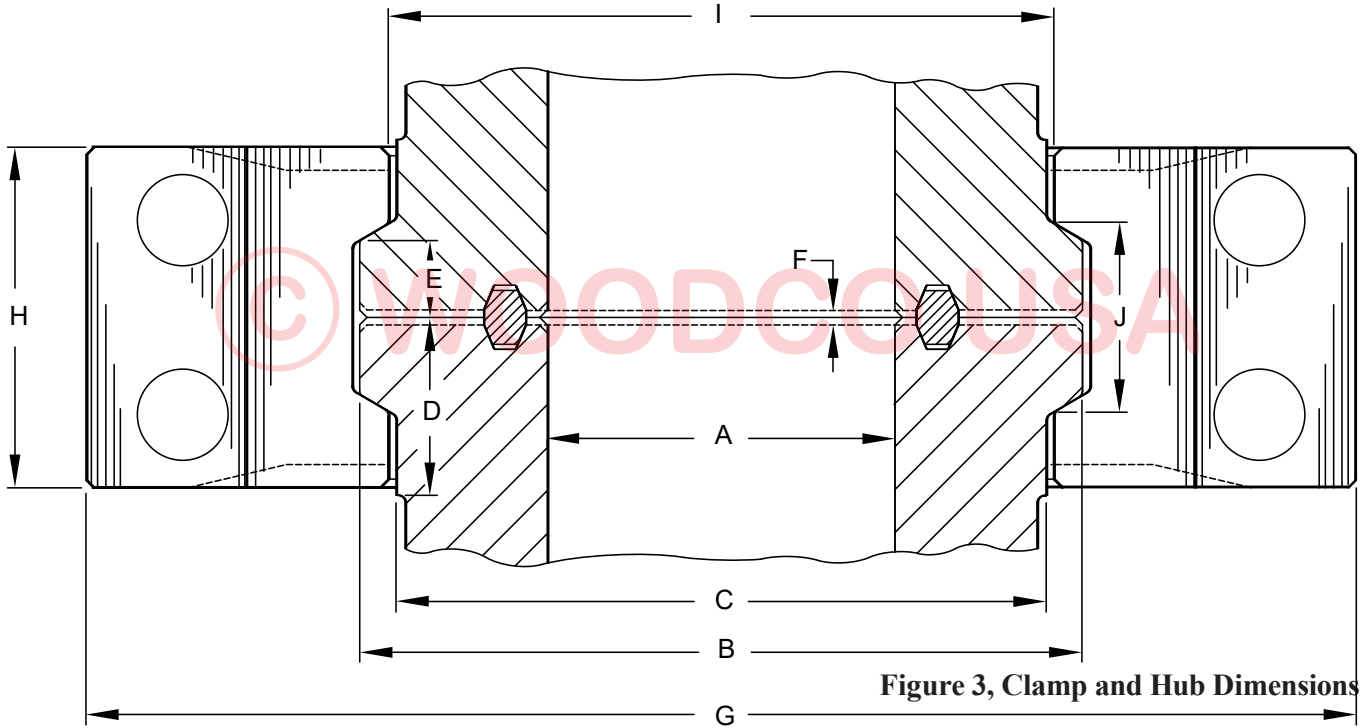


Figure 3, Clamp and Hub Dimensions

Table 2, Clamp and Hub Dimensions (continued)

(All dimensions in inches)

BORE A	WORKING PRESSURE (PSI)	RING GASKET		CLAMP NO.	HUB DIMENSIONS						F (RX ONLY) NOT API	CLAMP DIMENSIONS			
		RX	BX		B	C	D	E				G	H	I	J
								SR	RX	BX					
3 1/8	5,000	-	154	4	6.312	4.938	2.625	-	-	1.166	-	12.50	4.47	5.125	2.875
	5,000	27*	-	4	6.312	4.938	2.375	-	.911	-	.47	12.50	4.47	5.125	2.875
3 1/16	10,000	-	154	5	7.625	6.250	2.750	-	-	1.197	-	13.75	4.50	6.438	2.938
	10,000	27*	-	5	7.625	6.250	2.375	-	.943	-	.47	13.75	4.50	6.438	2.938
	15,000	-	154	6	8.437	6.812	3.000	-	-	1.310	-	16.00	5.38	7.062	3.250
	15,000	27*	-	6	8.437	6.812	2.750	-	1.067	-	.47	16.00	5.38	7.062	3.250
4 1/16	20,000	-	154	8	13.250	11.625	3.625	-	-	1.622	-	22.88	6.50	11.875	3.875
	5,000	-	155	5	7.625	6.250	2.500	-	-	1.197	-	13.75	4.50	6.438	2.938
	5,000	35*	-	5	7.625	6.250	2.375	-	.943	-	.47	13.75	4.50	6.438	2.938
	10,000	-	155	6	8.437	6.812	3.000	-	-	1.310	-	16.00	5.38	7.062	3.250
7 1/16	10,000	35*	-	6	8.437	6.812	2.750	-	1.067	-	.47	16.00	5.38	7.062	3.250
	15,000	-	155	8	13.250	11.625	3.625	-	-	1.622	-	22.88	6.50	11.875	3.875
	20,000	-	155	10	16.250	14.625	4.125	-	-	1.653	-	27.25	7.75	14.875	3.938
	10,000	-	169*	7	10.875	9.250	3.375	-	-	1.459	-	19.50	5.88	9.500	3.548
5 1/8	15,000	-	169*	8	13.250	11.625	3.625	-	-	1.622	-	22.88	6.50	11.875	3.875
	2,000	45	-	25	10.375	8.875	2.625	1.443	-	-	-	16.75	4.75	9.125	3.459
7 1/16	5,000	-	156	8	13.250	11.625	3.625	-	-	1.622	-	22.88	6.50	11.875	3.875
	5,000	45*	-	7	10.875	9.250	3.125	-	1.224	-	.47	19.50	5.88	9.500	3.548
	10,000	-	156	10	16.250	14.625	4.125	-	-	1.653	-	27.25	7.75	14.875	3.938
	10,000	45*	-	8	13.250	11.625	3.375	-	1.380	-	.47	22.88	6.50	11.875	3.875

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

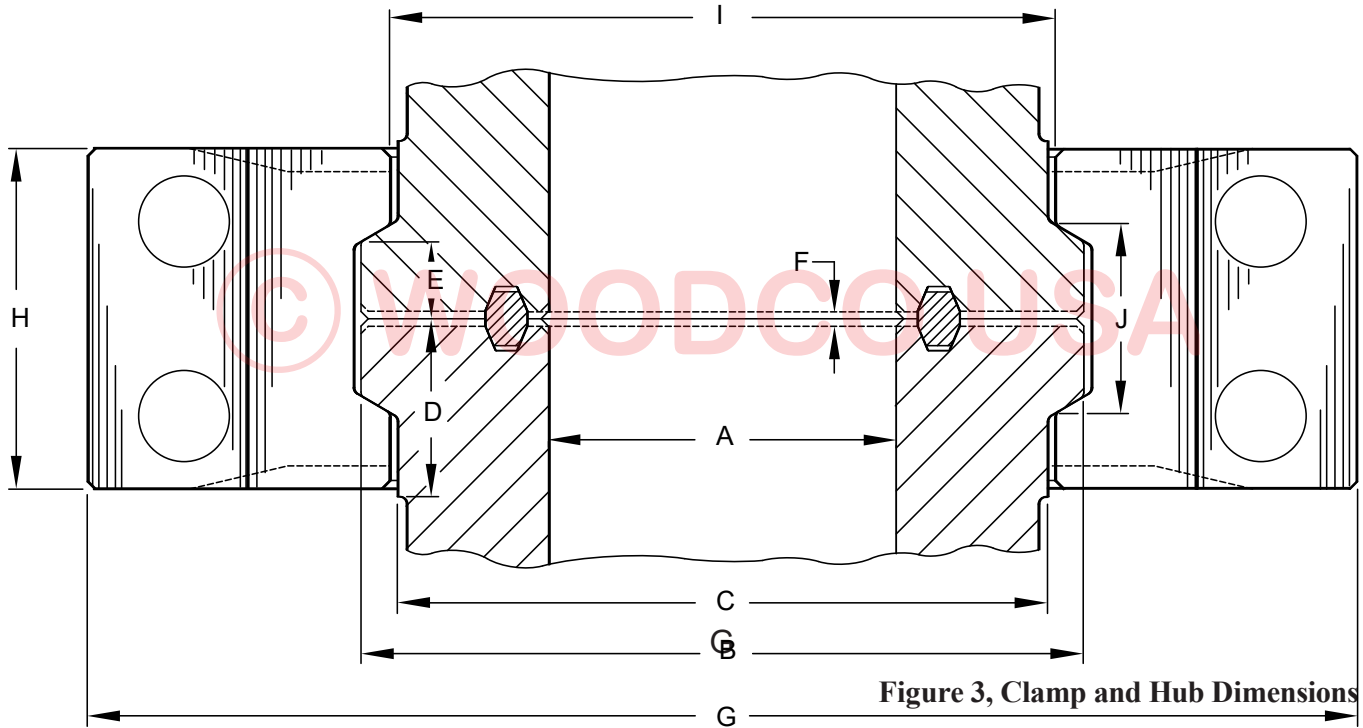


Figure 3, Clamp and Hub Dimensions

Table 2, Clamp and Hub Dimensions (continued)

(All dimensions in inches)

BORE A	WORKING PRESSURE (PSI)	RING GASKET		CLAMP NO.	HUB DIMENSIONS						F (RX ONLY) NOT API	CLAMP DIMENSIONS			
		RX	BX		B	C	D	E				G	H	I	J
								SR	RX	BX					
7 1/16	15,000	-	156	22	20.625	18.625	5.125	-	-	2.035	-	33.62	9.25	18.875	4.875
	15,000	45*	-	10	16.250	14.625	3.625**	-	1.411	-	.47	27.25	7.75	14.875	3.938
9	20,000	-	156	15	22.250	20.625	5.375	-	-	2.309	-	39.00	10.38	20.875	5.250
	5,000	-	157	8	13.250	11.625	3.625	-	-	1.622	-	22.88	6.50	11.875	3.875
	5,000	49*	-	8	13.250	11.625	3.375	-	1.380	-	.47	22.88	6.50	11.875	3.875
10,000	10,000	-	157	10	16.250	14.625	4.125	-	-	1.653	-	27.25	7.75	14.875	3.938
	10,000	49*	-	10	16.250	14.625	3.625**	-	1.411	-	.47	27.25	7.75	14.875	3.938
	10,000	49*	-	10	16.250	14.625	3.625**	-	1.411	-	.47	27.25	7.75	14.875	3.938
11	3,000	53	-	9	15.625	14.000	2.875	1.399	-	-	-	24.50	5.75	14.250	3.429
	3,000	53*	-	9	15.625	14.000	2.875	-	1.130	-	.47	24.50	5.75	14.250	3.429
	5,000	-	158	10	16.250	14.625	4.125	-	-	1.654	-	27.25	7.75	14.875	3.938
10,000	5,000	53*	-	10	16.250	14.625	3.625**	-	1.411	-	.47	27.25	7.75	14.875	3.938
	10,000	-	158	22	20.625	18.625	5.125	-	-	2.035	-	33.62	9.25	18.875	4.875
	10,000	53*	-	13	20.625	19.000	4.250	-	1.630	-	.47	33.00	9.25	19.250	4.375
15,000	15,000	-	158	15	22.250	20.625	5.375	-	-	2.309	-	39.00	10.38	20.875	5.250
	20,000	-	158	28	28.000	25.000	7.000	-	-	3.005	-	45.25	12.00	25.250	7.282
	20,000	-	158	28	28.000	25.000	7.000	-	-	3.005	-	45.25	12.00	25.250	7.282
13 5/8	3,000	57	-	11	18.375	16.750	3.000	1.336	-	-	-	27.62	5.88	17.250	3.188
	3,000	57*	-	11	18.375	16.750	3.000	-	1.067	-	.47	27.62	5.88	17.250	3.188
	5,000	-	160	13	20.625	19.000	5.625	-	-	1.871	-	33.00	9.25	19.250	4.375
10,000	5,000	57*	-	13	20.625	19.000	4.250	-	1.630	-	.47	33.00	9.25	19.250	4.375
	10,000	-	159	15	22.250	20.625	5.375	-	-	2.309	-	39.00	10.38	20.875	5.250
	10,000	57*	-	15	22.250	20.625	5.125	-	2.067	-	.47	39.00	10.38	20.875	5.250
15,000	-	159	28	28.000	25.000	7.000	-	-	3.005	-	45.25	12.00	25.250	7.282	

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

** Caution: Current WOODCO USA #10 Clamps require Hub length minimum to measure 4-1/8" for assembly.

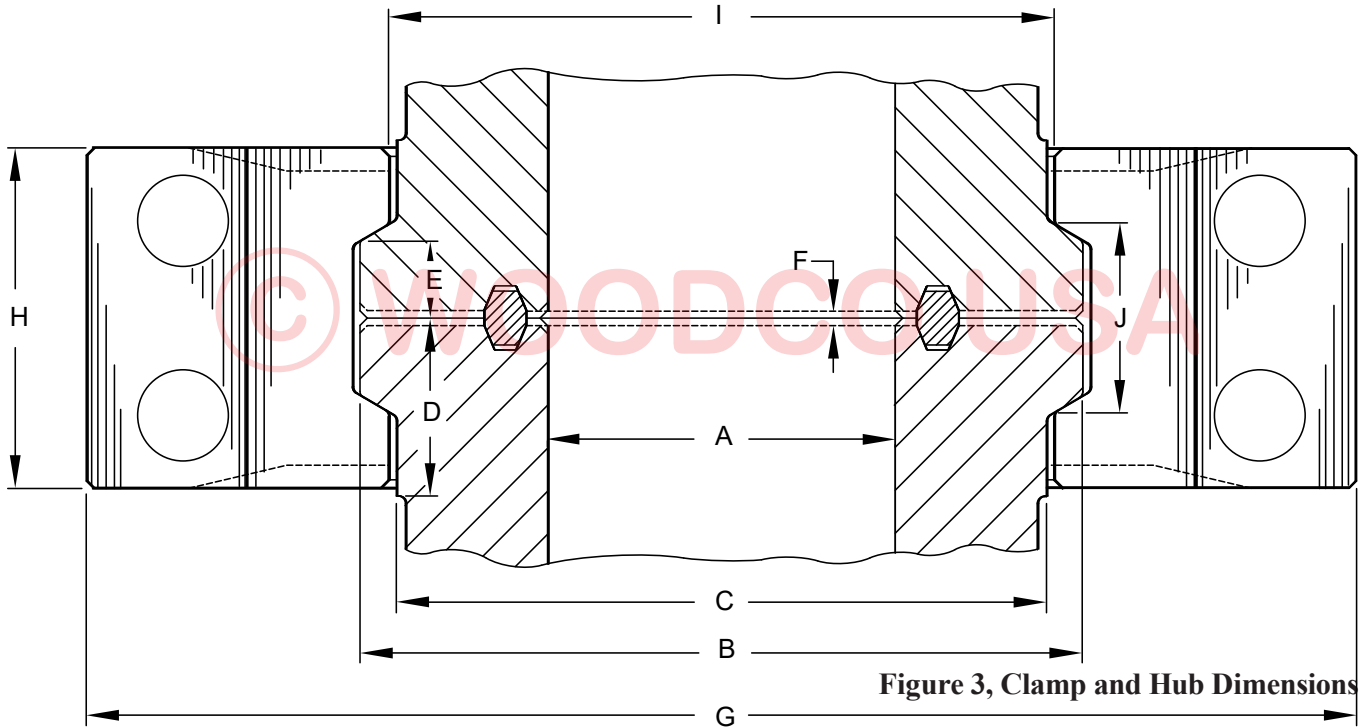


Figure 3, Clamp and Hub Dimensions

Table 2, Clamp and Hub Dimensions (continued)

(All dimensions in inches)

BORE A	WORKING PRESSURE (PSI)	RING GASKET		CLAMP NO.	HUB DIMENSIONS						F (RX ONLY) NOT API	CLAMP DIMENSIONS			
		RX	BX		B	C	D	E				G	H	I	J
								SR	RX	BX					
16 3/4	2,000	65	-	12	20.375	19.000	2.500	1.269	-	-	-	29.12	5.75	19.500	2.938
	2,000	65*	-	12	20.375	19.000	2.500	-	1.005	-	.47	29.12	5.75	19.500	2.938
	3,000	65	-	14	21.250	19.625	3.000	1.459	-	-	-	31.25	6.81	20.125	3.433
	3,000	65*	-	14	21.250	19.625	3.000	-	1.193	-	.47	31.25	6.81	20.125	3.433
	5,000	-	162	19	25.625	24.000	6.000	-	-	1.778	-	40.50	10.50	24.250	4.188
	5,000	65*	-	19	25.625	24.000	6.000	-	1.536	-	.47	40.50	10.50	24.250	4.188
	5,000	-	161*	19	25.625	24.000	6.000	-	-	1.778	-	40.50	10.50	24.250	4.188
	10,000	-	162	28	28.000	25.000	7.000	-	-	3.005	-	45.25	12.00	25.250	7.282
18 3/4	10,000	-	164	27	31.250	27.875	8.000	-	-	3.630	-	49.50	13.12	28.125	8.707
	15,000	-	164	26	34.000	30.500	8.000	-	-	4.005	-	54.50	15.81	30.750	9.515
20 3/4	2,000	73*	-	18	26.375	24.500	4.125	-	1.563	-	.59	39.00	9.50	24.750	4.492
	3,000	73*	-	17	25.625	24.000	3.750	-	1.474	-	.59	38.12	9.25	24.500	4.053
	3,000	73*	-	18	26.375	24.500	4.125	-	1.563	-	.59	39.00	9.50	24.750	4.492
	3,000	73*	-	18	26.375	24.500	4.125	-	1.872	-	.00	39.00	9.50	24.750	4.492
21 1/4	2,000	73*	-	16	24.812	23.188	2.875	-	1.161	-	.59	35.00	6.81	23.750	3.397
	2,000	73	-	18	26.375	24.500	4.125	1.872	-	-	-	39.00	9.50	24.750	4.492
	2,000	73*	-	18	26.375	24.500	4.125	-	1.563	-	.59	39.00	9.50	24.750	4.492
	2,000	73*	-	18	26.375	24.500	4.125	-	1.872	-	.00	39.00	9.50	24.750	4.492
	5,000	-	165	27	31.250	27.875	8.000	-	-	3.630	-	49.50	13.12	28.125	8.707
	10,000	-	166	26	34.000	30.500	8.000	-	-	4.005	-	54.50	15.81	30.750	9.515
30	1,000	SPCL	-	20	34.750	32.750	4.000	-	-	-	-	46.12	7.62	33.250	4.674

* NOT API

NOTE: Reference this page to obtain parts information for WOODCO USA clamps, or to determine which hub(s) a clamp fits.

3.0 Instructions for Installation and Care

You may install a WOODCO USA clamp in any orientation desired. Prior to installation of the clamp, clean and lubricate the tapered contact surfaces of the hubs and the clamp with API RP 5A3 / ISO 13678 thread compound or other extreme pressure grease. Coated bolts and nuts do not require lubrication. Lubricate replacement uncoated bolts and nut bearing surfaces with API RP 5A3 / ISO 13678 thread compound in order to provide proper make up force using the recommended torques.

Keep clamp halves matched and turned so that all marking appears on the same side of the clamp.

When installing, keep the spacing between the clamp halves approximately equal. Put the bolts, nuts, and washers in place and arranged as shown in Figure 4.

Perform the tightening of the nuts so as to draw the clamp together evenly on each side. Tighten the bolts to the recommended bolt torque, reference

Confirm make up on hubs with SR and BX ring grooves by observing, through the gaps, that the hub faces have come into contact. After make up, clearance between the hub neck O.D. and the clamp I.D. should appear uniform.

Excessive torque to achieve make up indicates some problem with fit or finish (rust on clamp or hub mating surfaces can result in difficulty during make up).

Protect the mating surfaces of hub connections and clamps in the same manner as ring grooves when not in use. Clamps or clamp hubs, if allowed to rust, lose their dimensional accuracy and finish and may become unusable.

Figure 4

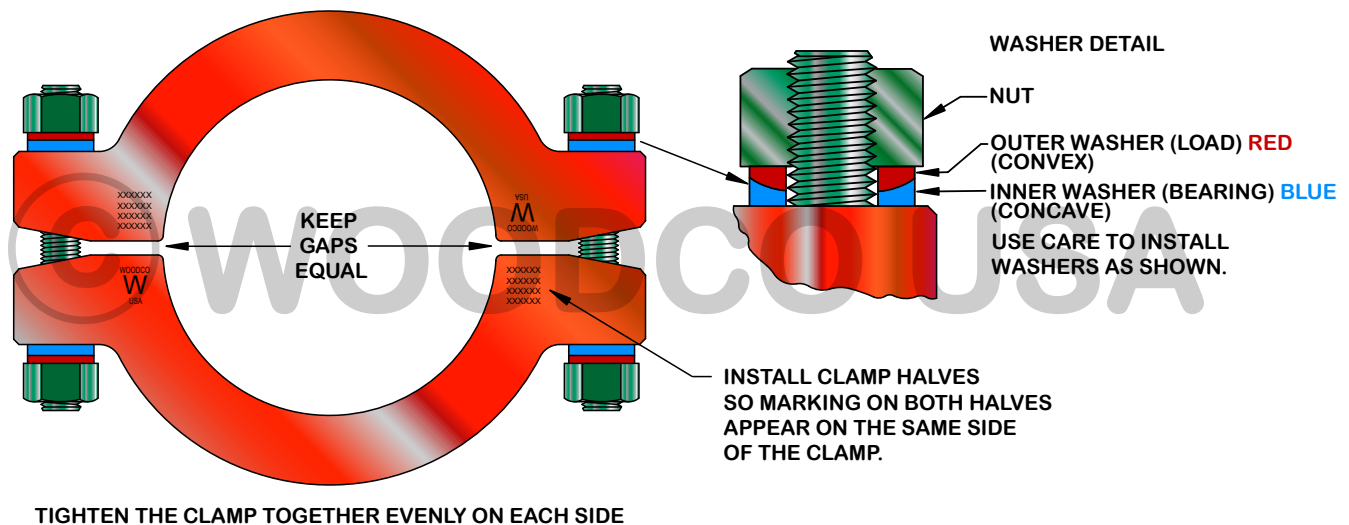


Table 3, Recommended Bolt Torque for WOODCO USA Hub Clamps

BOLT SIZE	FLOUROPOLYMER COATED B7/L7 BOLTS* (FT-LBS)	UNCOATED B7/L7 BOLTS LUBRICATED WITH API 5A2 THREAD COMPOUND** (FT-LBS)
$7/8$ - 8UN	185	313
1 - 8UN	280	474
$1 \frac{1}{8}$ - 8UN	400	686
$1 \frac{1}{4}$ - 8UN	550	953
$1 \frac{3}{8}$ - 8UN	735	1281
$1 \frac{1}{2}$ - 8UN	960	1676
$1 \frac{5}{8}$ - 8UN	1225	2146
$1 \frac{7}{8}$ - 8UN	1890	3331
$2 \frac{1}{4}$ - 8UN	3270	5821
$2 \frac{1}{2}$ - 8UN	4500	8028
3 - 8UN*	7780	13982
$3 \frac{1}{4}$ - 8UN*	9900	17830
4 - 8UN*	18475	33461

* WOODCO USA assembles API 16A Clamps with L7 Bolts only. Torque values for Bolts over 2-1/2" apply to L7 Bolts only.

** Lubricate uncoated Bolts and Nut Faces with API BUL 5A3 / ISO 13678 Thread Compound.

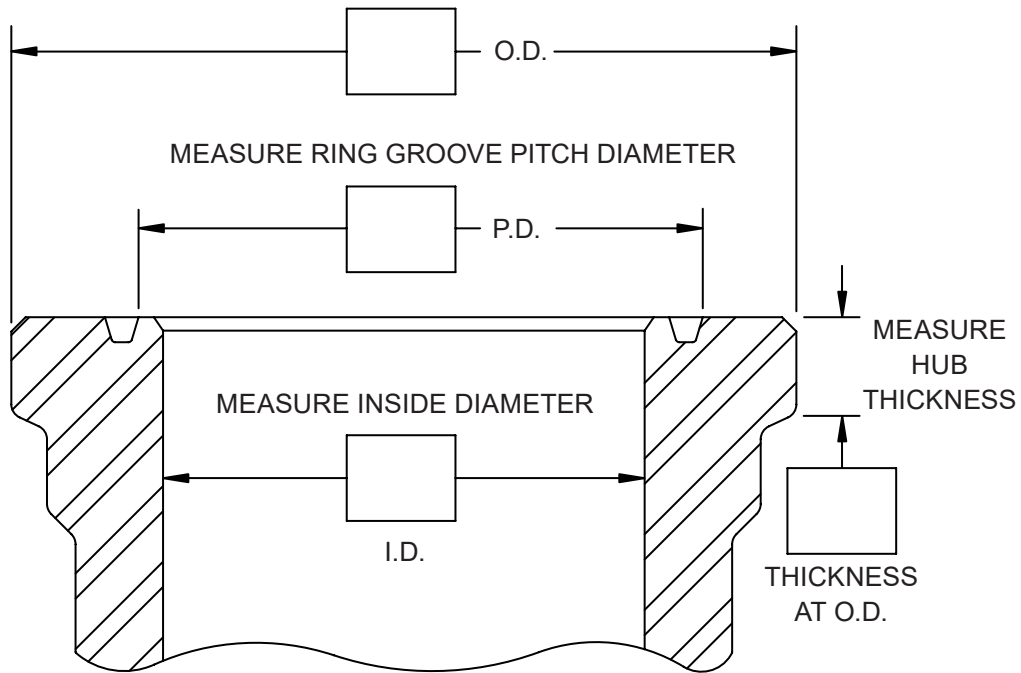
Appendix A

Hub Identification Worksheet

(For Clamps [Click Here](#))

To determine the nominal size and pressure rating of any existing Hub Connection, measure the Hub dimensions indicated on the drawing below and provide this information to WOODCO USA, or See [Hub Slide Rule Program](#).

USING AN ACURATE SCALE
 MEASURE HUB OUTSIDE DIAMETER



NOTE: MEASURE RING GROOVE PITCH DIAMETER BY MEASURING FROM INSIDE EDGE OF RING GROOVE ON ONE SIDE, TO OUTSIDE EDGE OF RING GROOVE ON OPPOSITE SIDE.

	HUB OUTSIDE DIAMETER	RING GROOVE PITCH DIAMETER	HUB THICKNESS	BORE INSIDE DIAMETER
HUB 1.	_____	_____	_____	_____
HUB 2.	_____	_____	_____	_____
HUB 3.	_____	_____	_____	_____
HUB 4.	_____	_____	_____	_____

* To obtain more complete information about Hub Connection Equipment, see the [WOODCO USA Catalog for Pressure Control Equipment](#).

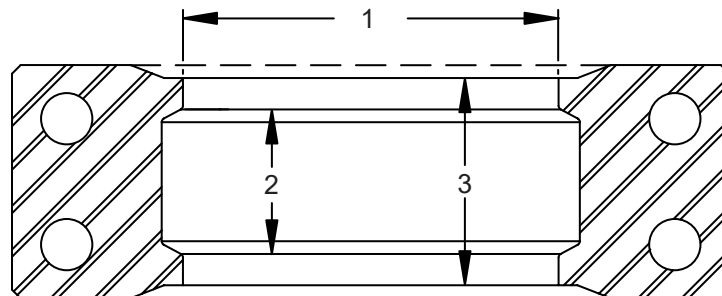
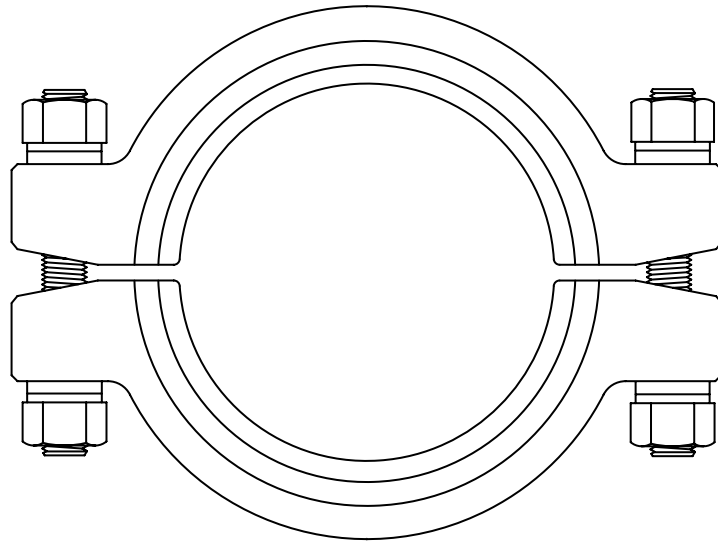
Appendix B

Clamp Identification Worksheet
 ([For Hubs Click Here](#))

To identify a Clamp by basic dimensions, measure the Clamp dimensions indicated on the drawing below and provide this information to WOODCO USA, or See [Clamp Slide Rule Program](#).

USING A SCALE OR
 MEASURING TAPE:

1. MEASURE THE CLAMP
 INSIDE DIAMETER (I.D.).
2. MEASURE THE
 INTERNAL GROOVE
 HEIGHT (OR WIDTH).
3. MEASURE CLAMP
 HEIGHT (OR WIDTH) AS
 MEASURED THRU THE
 I.D. BORE.



	1	2	3
	CLAMP	INTERNAL GROOVE HEIGHT	CLAMP HEIGHT
	INSIDE DIAMETER (I.D.)	MEASURED THRU I.D.	MEASURED THRU I.D.

CLAMP 1.			
CLAMP 2.			
CLAMP 3.			
CLAMP 4.			

To obtain more information about WOODCO USA Clamps, click on this catalog's [Table of Contents](#).
 To obtain more information about Clamp Hub Connection Equipment, see the [WOODCO USA Catalog for Pressure Control Equipment](#).

Appendix C

WOODCO USA
Number 6 API Spec 16A Clamp
(All API designated sizes available)



WOODCO USA # 6 Clamp Assembly
with Xylan coated bolts, nuts and spherical washers.
Fits 2-9/16" 20M, 3-1/16" 15M and 4-1/16" 10M Hubs.

Appendix D

WOODCO USA
Number 14 API Spec 16A Clamp
(All API designated sizes available)



WOODCO USA # 14 Clamp Assembly
with Xylan coated bolts, nuts and spherical washers.
Fits 16-3/4" 3M Hubs.

Appendix E

DNV·GL

Certificate No:
TAD00000ZH

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Fitting

with type designation(s)
Clamp Assemblies (#1 to #22 and #25 to #28)

Issued to
Woodco USA
Houston, TX, USA

is found to comply with
DNVGL-OS-E101 – Drilling facilities, Edition January 2018
DNVGL-SI-0166 - Verification for Compliance with Norwegian shelf regulations - Ch.2 Sec.7
DRILL(N), July 2015

Application :

See page 2

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Type Approval Certificate is 3 pages, and replaces D-5473 as issued on 2014-03-04.

Issued at **Houston** on **2018-08-15**

This Certificate is valid until **2023-08-14**.

DNV GL local station: **Certification & Inspection Services**

Approval Engineer: **M. Kevin Mandeville Jr.**



for **DNV GL**
Digitally Signed By: **van Mierlo,**
Meindert DNV GL Houston, US
Signing Date: 8/17/2018

Meindert van Mierlo
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Form code: TA 251

Revision: 2016-12

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Page 1 of 3

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Appendix F

 American Petroleum Institute  2018-151	Certificate of Authority to use the Official API Monogram License Number: 16A-0004 ORIGINAL
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